

WHAT IS CLAIMED IS:

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1. A receiver which demodulates an Orthogonal Frequency Division Multiplexing symbol transmitted by an Orthogonal Frequency Division Multiplexing method, comprising:
- 10 a delay profile generation unit which generates a delay profile regarding a preceding wave and a delayed wave which are included in a received signal;
- a demodulation unit which demodulates
- 15 said received signal so as to output a demodulated signal per sub-carrier;
- a hard-decision unit which makes a hard decision per sub-carrier on a signal point based on said demodulated signal so as to
- 20 output a hard-decision signal;
- a replica generation unit which uses the hard-decision signal to generate a replica signal per sub-carrier; and
- an inter-carrier interference
- 25 suppression unit which adds a difference between said hard-decision signal and said replica signal to said demodulated signal so as to suppress an inter-carrier interference;
- wherein said replica generation unit
- 30 comprises:
- a time-domain received signal generation unit which inverse-Fourier transforms said hard-decision signal so as to generate a received signal in time domain;
- 35 a signal component suppression unit which suppresses, by using a preceding symbol that is an already-demodulated OFDM symbol which

precedes a target demodulating symbol that is a target OFDM symbol to be demodulated, a signal component of said preceding symbol which is included in said delayed wave;

5 a modified received signal generation unit which adds, before said target demodulating symbol in said delayed wave, a portion of said received signal in said time domain; and

10 a replica signal generation unit which generates said replica signal by Fourier-transforming said modified received signal.

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2. The receiver as claimed in claim 1, wherein said hard-decision unit is adapted to make the hard decision per sub-carrier on the signal point based on a signal in which said demodulated signal and the demodulated signal in another diversity branch are combined so as to output the hard-decision signal.

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3. The receiver as claimed in claim 1, wherein said hard-decision unit comprises:

30 a decoding unit which error-correction decodes said demodulated signal;

 a decision unit which makes the hard decision per sub-carrier on an error-correction decoded signal point; and

35 an output unit which error-correction decodes the hard-decision result so as to

output said hard-decision signal.

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4. The receiver as claimed in claim 1, further comprising a multi-stage processing route which performs a series of processing including generation of the hard-decision signal, generation of the replica signal, and suppression of the inter-carrier interference.

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5. The receiver as claimed in claim 1, further comprising a modified received signal generation unit which further adds a portion of a known signal which is received per predetermined number of OFDM symbols before the demodulated symbol of said delayed wave so as to generate the modified received signal.

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6. The receiver as claimed in claim 1, wherein said received signal is modified so as to make signal contents of a portion preceding the target demodulating symbol, which is included in the delayed wave, equal to said portion of the received signal in the time domain.

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7. A receiver which demodulates an Orthogonal Frequency Division Multiplexing symbol transmitted by an Orthogonal Frequency Division Multiplexing method, comprising:

5 a delay profile generation unit which generates a delay profile regarding a preceding wave and a delayed wave which are included in a received signal;

 a signal component suppression unit
10 which suppresses, by using a preceding symbol that is an already-demodulated OFDM symbol which precedes a target demodulating symbol that is a target OFDM symbol to be demodulated, a signal component of said preceding symbol which is
15 included in said delayed wave;

 a demodulation unit which demodulates said received signal so as to output a demodulated signal per sub-carrier;

 a hard-decision unit which makes a
20 hard decision per sub-carrier on a signal point based on said demodulated signal so as to output a hard-decision signal;

 a replica generation unit which uses the hard-decision signal to generate a replica
25 signal per sub-carrier; and

 an inter-carrier interference suppression unit which adds a difference between said hard-decision signal and said replica signal to said demodulated signal so as to
30 suppress an inter-carrier interference;

 wherein said replica generation unit comprises:

 a time-domain received signal generation unit which inverse-Fourier transforms
35 said hard-decision signal so as to generate a received signal in time domain;

 a modified received signal generation

unit which adds, before said target demodulating symbol in said delayed wave, a portion of said received signal in said time domain; and

5 a replica signal generation unit which generates said replica signal by Fourier-transforming said modified received signal.

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8. The receiver as claimed in claim 7, wherein said hard-decision unit is adapted to make the hard decision per sub-carrier on the signal point based on a signal in which said demodulated signal and the demodulated signal at another diversity branch are combined so as to output the hard-decision signal.

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9. The receiver as claimed in claim 7, wherein said hard-decision unit comprises:

a decoding unit which error-correction decodes said demodulated signal;

30 a decision unit which makes the hard decision per sub-carrier on an error-correction decoded signal point; and

an output unit which error-correction decodes the hard-decision result so as to output said hard-decision signal;

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10. The receiver as claimed in claim 7,
further comprising a multi-stage processing route
which performs a series of processing including
5 the generation of the hard-decision signal, the
generation of the replica signal, and the
suppression of the inter-carrier interference.

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11. The receiver as claimed in claim 7,
further comprising a modified received signal
generation unit which further adds, before the
15 demodulated symbol in said delayed wave, a
portion of a known signal which is received per
predetermined number of OFDM symbols.

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12. The receiver as claimed in claim 7,
wherein said received signal is
modified so as to make signal contents of a
25 portion preceding the target demodulating symbol,
which is included in the delayed wave, to be
equal to said portion of the received signal in
the time domain.

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